

REMARKS/ARGUMENTS

Favorable reconsideration of the present application, in light of the following discussion, is respectfully requested.

Claims 1-38 are currently pending.

In the outstanding Office Action Claims 1-12, 14-27, and 29-38 were rejected as being unpatentable over Tadakuma et al. ("A 104 GHZ 328 FS Soliton Pulse Train Generation Through a Comb-Like Dispersion Profiled Fiber Using Short High Nonlinear Dispersion Fibers") in view of Yatsu et al. ("High-Quality Sub-100-FS Optical Pulse Generation by Fiber-Optical Soliton Compression of Gain-Switched..."); and Claims 13 and 28 were rejected as being unpatentable over Tadakuma et al. in view of Yatsu et al. and in further view of Chernikov et al. ("Comb-Like Dispersion-Profiled Fiber for Soliton Pulse Train Generation").

Briefly recapitulating, Claim 1 is directed to a device for producing optical pulses comprising an optical mirror that includes a fiber optic loop. The fiber optic loop comprises a comb-like dispersion profiled fiber having three or more sections characterized by changes in dispersion and arranged to compress pulses propagating there through. The sections have lengths such that the counter-propagating pulses are phase-shifted with respect to each other so as to optically interfere with each other to prevent noise.

There are three basic requirements for a *prima facie* case of obviousness, (1) there must be some suggestion or motivation to modify the reference or to combine the reference teachings, (2) there must be a reasonable expectation of success, and (3) the prior art reference must teach or suggest all the claim limitations. It is respectfully submitted that in light of the teachings of Tadakuma et al. and Yatsu et al., one of ordinary skill in the art would have lacked the motivation to combine these references, especially since the principle of operation of Tadakuma would be substantially changed.

Tadakuma teaches a system for generating a soliton pulse train through a comb-like dispersion profiled fiber. Fig. 2 of Tadakuma teaches two laser diode sources that are coupled together to form a single beam of light. This single beam of light passes through a linear comb-like dispersion profiled fiber (CDPF). Tadakuma teaches that the main feature of the experimental setup is the use of high non-linearity fiber. It is the use of the high non-linearity fiber that generates sub-picosecond pulse trains. Tadakuma does not teach or suggest the use of an optical loop mirror.

The outstanding Office Action suggests that an optical loop mirror could be coupled to the ends of the (CDPF) to suppress pedestals.¹ Applicants respectfully traverse this assertion. Coupling an optical mirror to the CPDF would provide no advantage and would substantially alter Tadakuma.

Tadakuma teaches against the use of an optical loop mirror because the two laser diode sources are coupled to together to form a single wave before entering the CDPF. Tadakuma does not rely on counter-propagating pulses that optically interfere with each other to generate short optical pluses. Thus, Tadakuma has no use for an optical loop mirror. Attempting to replace the CDPF with an optical mirror would substantially modify the principle of operation of Tadakuma, which is to generate sub-picosecond pluses by passing a single wave (not two counter-propagating waves) through a fiber (not an optical loop mirror).

MPEP §2143.01 states:

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings are not sufficient to render the claims *prima facie* obvious.

Therefore, Applicants respectfully submit that Tadakuma in view of Yatsu cannot render the claims *prima facie* obvious because the principle of operation of Tadakuma is changed by combining it with Yatsu as discussed above. Accordingly, Applicants

¹ Office Action, paragraph 4.

respectfully submit that Claims 1-12, 14-27, and 29-38 patentably distinguish over the combination of Tadakuma and Yatsu.

With regard to Claims 13 and 28, these claims are rejected based on a tertiary reference to Chernikov et al., which is asserted for its disclosure of a CDPF coupled after an optical source for compressing an optical pulse. However, even if Chernikov et al. does disclose this feature, this feature does not cure the deficiencies as discussed above with regard to Claim 1 and the other pending claims. Therefore, Applicants respectfully submit that Claims 13 and 28 patentably distinguish over the combination of Tadakuma, Yatsu, and Chernikov et al.

Consequently, in light of the above discussion it is believed that Claims 1-38 patentably define over the asserted prior art. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully submitted,

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